Steven L. Beshear
Governor

Leonard K. Peters
Secretary

Energy and Environment Cabinet
Department for Environmental Protection
Division of Water
200 Fair Oaks Lane, 4th Floor
Frankfort, Kentucky 40601
Phone: (502) 564-3410
water.ky.gov

September 25, 2014

Hon. Brenda Powers, Mayor
City of Lancaster
300 West Maple Street
Lancaster, Kentucky 40444

Re: Asset Inventory for
City of Lancaster
County, Kentucky
AI ID: 1472; PLN20120002

Dear Mayor Powers:

The Asset Inventory Report for the City of Lancaster dated March 21, 2012, has been reviewed by this Division and found to conform with the requirements contained in administrative regulation 401 KAR 5:006.

The Division accepts the Asset Inventory Report in lieu of a Facility Plan. Acceptance of the Asset Inventory is hereby given based on the attached Asset Inventory Assessment Report which provides recommendations related to facility planning, operation, and management in an effort to ensure continued compliance with applicable regulations and protection of the waters of the Commonwealth.

Any questions may be directed to our office at (502) 564-3410.

Sincerely,

Cindy McDonald, Supervisor
Wastewater Planning Section
Water Infrastructure Branch

CM
Attachment

Cc: MSE of Kentucky, Inc.

Steven L. Beshear
Governor

Leonard K. Peters
Secretary

Energy and Environment Cabinet
Department for Environmental Protection
Division of Water
300 Fair Oaks Lane
Frankfort, Kentucky 40601
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R. Bruce Scott
Commissioner

ASSET INVENTORY ASSESSMENT REPORT
City of Lancaster, Garrard County, Kentucky
AI 1472; PLN20120002

The City of Lancaster has submitted, for approval by the Energy and Environment Cabinet (EEC), an Asset Inventory Report Form titled ***"Asset Inventory Report, City of Lancaster, Kentucky"*** dated March 2012 in lieu of a Facilities Plan. In accordance with 401 KAR 5:006, the Department for Environmental Protection (DEP) has prepared an Asset Inventory Assessment Report that summarizes the wastewater assets and their condition.

The Asset Inventory Assessment Report contains information related to organization structure and wastewater assets and is included in the following sections: A) Existing Wastewater Facilities; B) Water Quality; C) Current Finances and Future Needs; and D) Recommendations.

Interested persons are encouraged to submit comments on this assessment report within thirty (30) calendar days of the issue date. The EEC will take no action on this report until after the public comment period has ended and will evaluate all comments before a decision is made to proceed with approval of the Asset Inventory Report. Written comments are to be forwarded to Cindy McDonald, Supervisor, Wastewater Municipal Planning Section, Water Infrastructure Branch, Division of Water, 200 Fair Oaks 4th Floor, Frankfort, Kentucky 40601, or by e-mail to cindy.mcdonald@ky.gov.

Sincerely,

R. Bruce Scott, Commissioner
Department for Environmental Protection

CM

ASSET INVENTORY ASSESSMENT REPORT

City of Lancaster, Garrard County, Kentucky

AI# 1472; PLN20120002

The City of Lancaster submitted an Asset Inventory Report Form in lieu of a Facility Plan in March 2012 to demonstrate compliance with 401 KAR 5:006, Wastewater planning requirements for the regional planning agencies. The City of Lancaster's governing body is composed of a Mayor and an elected, six-person Commission. Eddie Woods and James Wilmot share primary oversight duties of the wastewater treatment plant and collection system and report to the Mayor. Both maintain Class I wastewater treatment operator licenses while Mr. Wood maintains a Class I wastewater collection operator license and Mr. Wilmot holds a Class II wastewater collection operator license. The City also has one additional certified operator who holds a Class I treatment and Class I collection license. In the event engineering services are required, the City has an ongoing agreement with Bell Engineering to be available as needed. All financial decisions are evaluated and processed according to standard accounting principles and current regulations, and must be approved by the Commission and the Mayor.

A. Existing Wastewater Facilities

Treatment Plant

The City of Lancaster owns and operates a 1.0 million gallon per day (mgd) wastewater treatment plant (WWTP) and collection system. The WWTP discharges to White Oak Creek, a tributary to the Dix River at Latitude 37.613890 and Longitude -84.586390 (Milepoint 2.65) pursuant to Kentucky Pollutant Discharge Elimination System (KPDES) Permit Number KY0054941.

The plant was originally constructed in 1964 with a design flow of 0.35 mgd. In 1988, the plant underwent a major upgrade to a 1.0 mgd secondary treatment facility with updates to the headworks, construction of two oxidation ditches, and chemical feed equipment. In 2008, chlorinators and post-aeration was added; a tertiary sand filter was added in 2011. The annual average flow for the last two years was 0.49 mgd or 49% of the hydraulic design capacity. The maximum daily flow recorded during the same time period was 2.50 mgd indicating significant infiltration and inflow (I/I) may be present.

The City of Lancaster has received numerous Notices of Violation within the past five years for exceeding the permitted effluent limits as presented in Table 1 for Fecal Coliform, Total Ammonia Nitrogen, and Total Suspended Solids. A new KPDES permit has been developed during the composition of this report. The new limits are presented in Table 2.

Table 1 Previous KPDES Permit Limits		
Parameter		Limits
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)		10.0 mg/l*
Total Suspended Solids (TSS)		30.0 mg/l*
Ammonia-Nitrogen (NH_3-N) :	Summer	2.0 mg/l*
	Winter	6.0 mg/l*
Dissolved Oxygen		7.0 mg/l (min.)**
Fecal Coliform		200 col./100 mls***
Total Phosphorus		Report
*Monthly Average	**Daily Minimum	***Monthly Geometric Mean

Table 2 New KPDES Permit Limits		
Parameter		Limits
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)		10.0 mg/l*
Total Suspended Solids (TSS)		30.0 mg/l*
Ammonia-Nitrogen (NH_3N) :	May 1-Oct 31	2.0 mg/l*
	Nov 1 – April 30	6.0 mg/l*
Dissolved Oxygen		7.0 mg/l**
E. Coli		130 col./100 mls***
Total Phosphorus		1.0 mg/l*
*Monthly Average	**Daily Minimum	***Monthly Geometric Mean

A review of Census data reveals the county's population has experienced an upward trend since the 1970s while during the same period the city's population has remained fairly constant. Over the past twenty years the county has experienced a growth of over 46 percent compared to the 0.6 percent growth in the city. Based on this information, population within the city limits would not be expected to change much in the next twenty years; but the county is expected to grow to approximately 21,677 people by 2035, as projected by the Kentucky State Data Center. The City of Lancaster has not planned an increase in wastewater treatment plant capacity because of this slow growth potential. They do, however, plan to make improvements including an additional belt filter press (2015), construction of free-standing clarifiers (2017), and new ultraviolet disinfection units (2025).

Collection System

The City is served by a conventional gravity sewer collection system consisting of gravity sewers, lift stations, and force mains. Approximately 66% (roughly 63,000 linear feet) of the City's collection system is comprised of primarily 8-inch clay pipe, with a portion of that being Orangeburg clay. The Orangeburg clay portion is a priority for replacement as it is brittle and has a high probability of failure and is currently a major cause of inflow and infiltration problems. Most of the clay pipe was installed in the 1950's and 1960's. The remaining 33% (about 33,000 linear feet) is PVC pipe which was mostly installed in the 1990's.

The City reported 13 pump stations installed over the years from 1980 to 1988. According to the map, there are 15 pump stations in the collection system. Approximately 1.5 miles of 6-inch cast iron force mains, installed in the 1980's, along with approximately 13 miles of primarily 4-inch force main was reported. The earliest anticipated renewal/maintenance dates are projected for 2018. Renewal/maintenance is not planned on the majority of the pump stations until 2025 and 2030.

The City passed Ordinance Number 90-5 in 1990 to define the terms and conditions of sewer service. The ordinance requires connection for properties "...situated within the City and abutting on any street, alley, or right-of-way in which there is now located or may in the future be located a public sanitary sewer of the City...within 30 days after date of official notice to do so, provided that said public sewer is within 100 feet of the property line."

Critical Assets

Critical assets are those assets having a significant role in the operation of a system. Their failure could be detrimental to the total system or facility components. Wastewater in Lancaster's collection system flows by gravity to lift stations a significant distance from the WWTP. These lift stations then transport the wastewater to the next lift station or directly to the WWTP. All lift stations are considered critical to the operation of the wastewater system. Because all of the lift stations have two pumps adequate to maintain flow through the system, they are considered to have 100% redundancy. However a few of the pump stations are more critical than others. The latest Wet Weather Inspection conducted by the Division of Water in April 2014 revealed recurring overflow issues with the Teaters Field, Buckeye, and Hill Court lift stations. A June 2014 Division of Water Wastewater Inspection noted the City is discussing alternatives with their procured engineer to replace, eliminate, or upgrade the Teaters Field lift station. Additionally, since the New School lift station serves the planning area's high school, the criticality should be considered high. In reviewing wastewater treatment plant components, certain more critical process are considered to have 100% redundancy (screening, oxidation ditches, clarifiers), while others have only 50% (tertiary filter, disinfection) and should be considered for future improvements.

B. Water Quality

The Planning Area is located within the Kentucky River Basin Management Unit and two HUC-11 watersheds, the Dix River and Herrington Lake. The Planning Area is drained by several unnamed tributaries feeding Boone Creek, Turkey Creek, and White Oak Creek. White Oak Creek has been assessed by the Kentucky Division of Water (DOW) and a Total Maximum Daily Load (TMDL) developed for E. coli. A portion of the Lancaster planning area is designated as a Surface Water Area Protection Program (SWAPP) zone for the City's Water Works which treats drinking water pumped from the Kentucky River into the Lancaster Reservoir. The City sells water to Garrard County Water Association. The City's planning area also falls within the priority watersheds of the Dix River and Herrington Lake. Segments 0.0 to 2.8 of White Oak Creek have been determined to be non-supporting for Primary Contact Recreation and Aquatic Life due to loss of riparian habitat, management pasture grazing, municipal point source discharges, agriculture, and urban runoff/storm sewers. None of the

waters within the Planning Area have been classified as special waters (i.e. Outstanding State Resource Water, Exceptional Water, or Reference Reach Water) or Outstanding National Resource Waters.

Groundwater is often a source of drinking water supply for humans and animals through wells and springs. The quality of the groundwater can be negatively impacted by both natural and man-made sources. The sensitivity to these potential pollutant sources has been assessed. The Lancaster Planning Area has been assessed as having a moderately high sensitivity to groundwater pollution.

C. Current Finances and Future Needs

The City reported expenses of $430,127.62 and revenues of $425,498.74 for Fiscal Year 2013-2014 to date. The current monthly billing rate for residential and commercial customers is $29.56 per 4000 gallons. The City has enacted an ordinance which will increase sewer rates by 5% in June 2015. Beginning June 2016, sewer rates will increase annually; the first year by 2.5% and each subsequent year based on the Consumer Price Index, not to exceed 3%.

Additionally, information from the WRIS database indicates projects planned for the next few years total approximately $2,816,420. Given a rate of inflation in the range of 1.5 – 2.0% and the current fund status, rates may not be sufficient to cover future expenses and allow coverage for rehabilitation, improvements, or potential emergency situations (i.e. equipment failure).

D. Recommendations

- The flow analysis indicates potential infiltration and inflow (I/I) problems; the City should continue to monitor the collection system and strive to remove and prevent excessive I/I as part of an on-going preventive maintenance and asset management program. The City should consider conducting a thorough evaluation of the entire wastewater system to develop a Corrective Action Plan addressing excessive I/I, equipment redundancy, and effluent violations. It is important to proactively plan for future improvements projects in order to address the need for funding well ahead of time to promote more affordable and less onerous increases in sewer user rates.

- The financial analysis assumed the annual increase in sewer rates as reported; but capital improvements are also planned. The City should review their rates annually to ensure they are adequate for long-term planning, operations, and maintenance.

- Electricity expenses consumed 17% of the City's sewer revenues. It is recommended the City evaluate their system and analyze the heavy electricity consuming aspects of their operations to optimize energy efficiency. This may be done through exploring energy audits, replacement of constant speed with variable speed drives, treatment process modifications, and alternative power supply options.

- Since growth is occurring significantly more in the county than in the current service area, the City may want to consider looking at serving areas outside the City limits, within the planning area. This would allow the City to develop additional revenue and help to prevent potential water quality and public health issues often found in populated and unsewered areas.

- The Asset Inventory Report is the basis for a complete Asset Management program. Tracking the condition of assets, as well as operating a comprehensive preventive maintenance program, is crucial to the efficient operation of a wastewater system. An Asset Management program is recommended not only for this reason, but to maintain the water quality of the receiving streams as well. The Division of Water recommends the City expand on the Asset Inventory Report and begin tracking the identified assets and their condition in a format that is useful and easy to manage.